

Application No. 10/760,524  
Amendment dated October 26, 2006  
Reply to Office Action of June 26, 2006

Docket No.: 2019-0236P

**REMARKS**

Claims 1-33 are now present in this application.

The specification and claims 1-13 and 15-17 have been amended, claims 14 and 18-25 have been cancelled without prejudice or disclaimer, and claims 26-33 have been presented. Reconsideration of the application, as amended, is respectfully requested.

Claims 2, 4-7 and 10-22 are currently withdrawn from consideration. However, the Examiner is reminded that if a generic or linking claim is found to be allowable, the election of species requirement should be withdrawn.

**Objections to the Claims**

Claims 17 and 19 stand objected to as containing improper dependencies. Accordingly, these claims have been amended to depend from claim 9, which provides antecedent basis for "the coating frame."

Claim 8 and 9 stand objected to for certain informalities. In view of the foregoing amendments, in which these claims have been revised to recite, "is selected from the group consisting of," it is respectfully submitted that these objections have been addressed.

Reconsideration and withdrawal of any objection to the claims are respectfully requested.

**Rejection under 35 USC 112**

Claims 1, 3, 8 and 9 stand rejected under 35 USC 112, second paragraph. This rejection is respectfully traversed.

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In view of the foregoing amendments, it is respectfully submitted that all claims particularly point out and distinctly claim the subject matter of the instant invention. In particular, claim 1 has been amended to recite that the brightness of said photocatalytic coated fluorescent lamp is greater than a lamp not provided with said semiconductor anatase  $\text{TiO}_2$  sol coating. Reconsideration and withdrawal of the 35 USC 112, second paragraph rejection are respectfully requested.

Rejections under 35 USC 102 and 103

Claims 1, 3, 8 and 9 stand rejected under 35 USC 102(b) as being anticipated by Kawakatsu, U.S. Patent 6,242,862. This rejection is respectfully traversed.

Claim 3 stands rejected under 35 USC 103 as being anticipated by Kawakatsu in view of Kobayashi et al., U.S. Patent 7,004,591. This rejection is respectfully traversed.

With regard to the present invention, the main component for preparing semiconductor nano-crystalline anatase  $\text{TiO}_2$  sol is  $\text{Ti}(\text{OR})_4$ , wherein the R is a hydrocarbon group,  $\text{C}_n\text{H}_{2n+1}$ , where  $n=1-5$ , and wherein the hydrocarbon group is methyl, ethyl, n-propyl, isopropyl, n-butyl, t-butyl, sec-butyl, pentyl or the like. This differs from the prior art utilized by the Examiner.

In particular, since the anatase  $\text{TiO}_2$  nano-crystalline particle of the present application is made in a water-based solution, bountiful hydroxyl groups are presented on the surface. When the anatase  $\text{TiO}_2$  sol is baked at low temperatures in a range of about 100-250°C for removing organic solvent and organic additives, good adhesion and nano-scale anatase  $\text{TiO}_2$  porous coating are obtained. Also, because the anatase  $\text{TiO}_2$  particle is below about 20nm, the primary particle is achieved at a 1.0 nm scale. Due to the nature of such a nano-scale material, the anatase

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TiO<sub>2</sub> coating presents photocatalytic effects in the visible light range, and the brightness of said photocatalytic coating fluorescent lamp increases because of the fluorescent property of said semiconductor anatase TiO<sub>2</sub> sol coating.

With regard to Kawakatsu et al., this patent uses TiO<sub>2</sub> anatase particles dispersed in an alcohol solvent to form the anatase TiO<sub>2</sub> particle sol. The hydroxyl groups (OH<sup>-</sup>) on the TiO<sub>2</sub> anatase particle surfaces are found at a low level, resulting in poor adhesion to the fluorescent lamp. The baking temperature is set above 200°C, because the TiO<sub>2</sub> anatase particle is in an uneven surface 2b of the ground layer 2 (see Fig. 5 and column 4, lines 16-27). Without the ground layer 2 to help to hold the TiO<sub>2</sub> anatase particle, the TiO<sub>2</sub> anatase particle cannot adhere to the lamp at a temperature of 200°C.

As is discussed in column 4, lines 27-29 of Kawakatsu et al., one suitable heating method is to bake the ground layer at about 650°C. The Examiner's attention is drawn to the difference in baking temperatures between the present application and Kawakatsu et al., i.e., 450°C. This difference in temperature provides evidence that the adhesive ability of the TiO<sub>2</sub> anatase particle of Kawakatsu et al. is not sufficient for use in the present invention.

In another embodiment of Kawakatsu et al., a method for coating the TiO<sub>2</sub> anatase is shown in column 15, lines 7-15 and Figs. 14 and 19. The inorganic materials are poured into the TiO<sub>2</sub> anatase particle sol to improve adhesion. The inorganic materials utilized in Kawakatsu et al. to enhance adhesion including silane coupling agent, SiO<sub>2</sub> sol, TiO<sub>2</sub> sol, or Al<sub>2</sub>O<sub>3</sub> sol. However, the distribution of these inorganic materials lowers the photocatalytic effect and air cleaning efficiency. After coating, the lamp is baked at a temperature of 400-600°C. It is

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therefore respectfully submitted that Kawakatsu et al. cannot coat the finished lamp product, but simply coats the glass tube only.

The secondary reference to Kobayashi fails to overcome the above-noted deficiencies of the primary reference.

In view of the foregoing amendments and remarks, it is respectfully submitted that the method of independent claim 1 and its dependent claims is not taught by the prior art utilized by the Examiner. Reconsideration and withdrawal of the 35 USC 102 and 103 rejections are respectfully requested.

#### Conclusion

Favorable reconsideration and an early Notice of Allowance are earnestly solicited.

Because the additional prior art cited by the Examiner has been included merely to show the state of the prior art and has not been utilized to reject the claims, no further comments concerning these documents are considered necessary at this time.

In the event that any outstanding matters remain in this application, the Examiner is invited to contact the undersigned at (703) 205-8000 in the Washington, D.C. area.

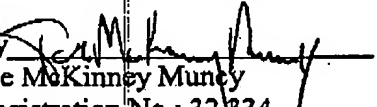
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If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Dated: October 26, 2006

Respectfully submitted,

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